

REMARKS

Claims 1-54 are currently pending in this application. Claims 27-54 were withdrawn from consideration. Reconsideration of the rejections of claims 1-26 is respectfully requested in light of the following remarks.

35 U.S.C. § 102 Rejections

The Examiner has rejected claims 1-9 and 14-22 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 7,079,897 to Sun et al. (Sun '897.) This rejection is respectfully traversed.

Applicant's claimed invention is directed to a system and method for automatic pacing interval optimization for each of a plurality of heart rate ranges. The method of the claimed invention in independent claim 1 includes the step of "for each of the plurality of different heart rate ranges, pacing the patient's heart using a plurality of different pacing intervals and measuring a corresponding hemodynamic response for each interval". The system of the claimed invention in independent claim 14 includes the limitation of "means for measuring hemodynamic response as the patient's heart is paced using the plurality of different pacing intervals, for each of the plurality of different heart rate ranges;". The Office Action states that "Sun discloses a rate responsive pacemaker with multiple sensors that monitor different hemodynamic responses (Col.4, ll. 58-64)". However, neither of the sensors disclosed in Sun '897 is being used as a hemodynamic sensor. It is submitted that a hemodynamic response is a measure of an aspect of blood circulation. Neither the accelerometer of Sun '897 (which senses motion or activity), nor the minute

ventilation sensor (which senses respiration), measures or senses an aspect of blood circulation. As such, Sun '897 cannot anticipate independent claims 1 or 14 or dependent claims 2-9 and 15-22.

Further, it is believed that the Examiner is equating "pacing intervals" with pacing rate in presenting this rejection. The present application does not use the term "pacing intervals" to mean pacing rate but rather intervals between pacing and/or sensing at various chambers of the heart within a given heart beat. The Sun '897 reference is not directed to optimizing pacing intervals as that term is used in the present application. Rather, Sun '897 is directed to optimization of pacing rates for a given level of exertion or activity as measured by various sensors for purposes of rate responsive pacing. For this reason, it is believed that the rejection of claims 1-9 and 14-22 cannot be sustained and should be withdrawn. Withdrawal of the rejection is respectfully requested.

35 U.S.C. § 103 Rejections

The Examiner has rejected claims 1-9 and 14-22 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,408,208 to Sun et al. (Sun '208), and further in view of U.S. Patent 5,154,170 to Bennett et al.

As with the Sun '897 reference, the Sun '208 reference is directed to a pacemaker that optimizes pacing rate for a given physiologic sensor input, particularly an accelerometer or minute ventilation sensor. Neither of these sensors as disclosed in Sun '208 measures a hemodynamic response. Further, Sun '208 is not directed to optimizing pacing intervals within a given heart beat such as the RA-

RV delay or RV-LV delay for a plurality of different heart rate ranges. (See, for example, paragraph [0011] on page 4 of the application.) Nor does Bennett '170 provide the missing teaching relative to optimization of pacing intervals. Bennett is also directed to optimization of pacing rate and not to pacing intervals for a plurality of different heart rate ranges. Thus, the combination of Sun '208 and Bennett does not render applicant's claimed invention obvious. Withdrawal of the rejection is respectfully requested.

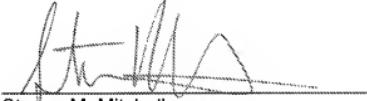
The Examiner has rejected claims 10-13 and 23-26 under 35 U.S.C. § 103(a) as being unpatentable over either Sun '208 and Bennett or Sun '897 as applied to claims 1 and 14 above, and further in view of U.S. Patent 6,366,811 to Carlson. While the Carlson '811 reference is directed to optimization of pacing intervals similar to the claimed invention in independent claims 1 and 14, Carlson does not teach, suggest or disclose that optimization should be performed over a plurality of heart rate ranges. In fact, Carlson teaches away from sensing at multiple rate ranges. "Analyzing the accelerometer signal during the period of quiescent activity minimizes motion artifact in the accelerometer signal. Further, analyzing the signal during the period of quiescent activity allows the measurements to be taken during relative steady state hemodynamic conditions." Col. 3, lines 7-12. As such, it would not have been obvious to combine the system of Carlson with any of the other rate responsive pacing references previously applied. Withdrawal of the rejection of claims 10-13 and 23-26 is respectfully requested.

Applicant respectfully submits that the present application with claims 1-26 is in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call Steven M. Mitchell at (408) 522-6101.

Pursuant to 37 C.F.R. 1.136(a)(3), Applicant hereby requests and authorizes the U.S. Patent and Trademark Office to (1) treat any concurrent or future reply that requires a petition for extension of time as incorporating a petition for extension of time for the appropriate length of time and (2) charge all required fees, including extension of time fees and fees under 37 C.F.R. 1.16 and 1.17, to Deposit Account No. 22-0265.

Respectfully submitted,

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